



Missouri Department of Natural Resources

Total Maximum Daily Load Information Sheet

Middle Fabius River

Water Body Segment at a Glance:

County: Lewis
Nearby Cities: Ewing
Length of impairment: 57 miles
Pollutant: Manganese
Source: Natural

Note: This river was deleted from the 2004/2006 303(d) List because the criterion for manganese has been removed from Missouri's Water Quality Standards.



State map showing location of watershed

Water Body Removed from List: Sept. 27, 2007

Description of the Problem

Beneficial uses of Middle Fabius River

- Livestock and Wildlife Watering
- Protection of Warm Water Aquatic Life
- Human Health Protection (Fish Consumption)
- Whole Body Contact Recreation – Category A
- Secondary Contact Recreation
- Drinking Water Supply
- Irrigation

Use that was listed as impaired

- Drinking Water Supply

Standards that apply

There is **no longer** a criterion in the Missouri Water Quality Standards (10 CSR 20-7.031) for manganese. The standard used to be 50 µg/L as the maximum amount of manganese allowed for Drinking Water Supplies. This was an aesthetic standard that sought to protect a water supply against possible taste, odor and laundry staining problems caused by excessive amounts of manganese. Exceedence of that standard was not a threat to human health.

Background Information and Water Quality Data

Monitoring of the Middle Fabius River near Ewing, Missouri, from 2000 through 2002 has shown an average level of dissolved manganese of 92 µg/L (micrograms per liter or parts per billion),

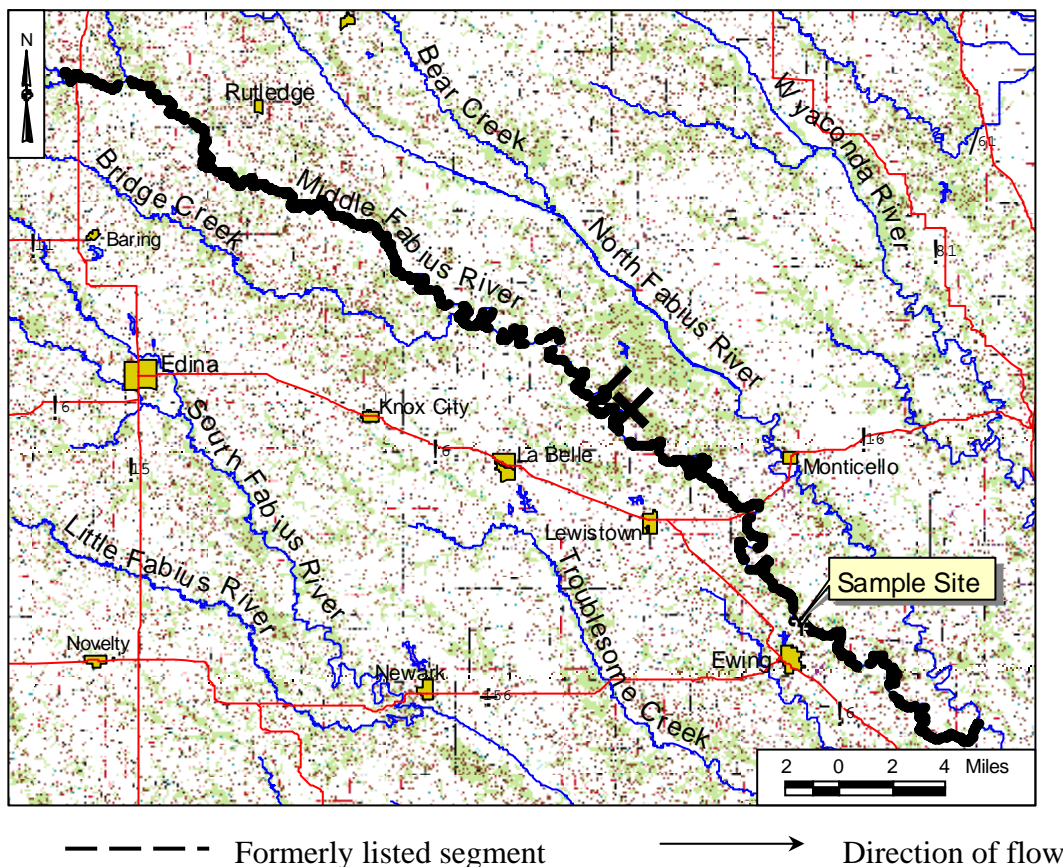
based on 10 individual samples. There are no known significant man-made sources of manganese in this watershed. The source of the manganese is believed to be natural weathering and erosion of earth materials (soils and subsoils) in this watershed. Several other streams in northeastern Missouri also have elevated levels of dissolved manganese.

Manganese does not present any human health hazards, but is responsible for offensive tastes and appearances in drinking water, as well as staining laundry and fixtures. It can react with tannins in coffee, tea and in other beverages, producing a black sludge, which affects both taste and appearance. Manganese causes a brownish-black staining of laundry, porcelain, dishes, utensils and glassware. Soaps and detergents do not remove the stains, and use of chlorine bleach can intensify the stains. Manganese can build up in pipelines, pressure tanks, water heaters and water softeners and causes equipment problems and energy cost increases due to mineral deposits.

The Missouri Clean Water Commission voted to remove manganese and iron from the list of impairments to drinking water sources since they do not cause health problem, do not adversely affect aquatic life and can be removed by drinking water treatment facilities. That action took effect Dec. 31, 2005 and the U.S. Environmental Protection Agency removed this river from the 2004/2006 303(d) List Sept. 27, 2007.

A map of the formerly listed portion of the river, the location of the sampling site and the water quality data are shown below.

Middle Fabius River in Lewis County, Missouri, Showing Sampling Site



Manganese data for Middle Fabius River, 2000-2002

Site Name	Year	Month	Day	Dissolved Manganese (µg/L)
Middle Fabius River 1 mile NE of Ewing	2000	3	21	145
Middle Fabius River 1 mile NE of Ewing	2000	5	25	244
Middle Fabius River 1 mile NE of Ewing	2000	8	31	48
Middle Fabius River 1 mile NE of Ewing	2000	11	28	132
Middle Fabius River 1 mile NE of Ewing	2001	3	8	184
Middle Fabius River 1 mile NE of Ewing	2001	6	22	3
Middle Fabius River 1 mile NE of Ewing	2001	9	10	28.3
Middle Fabius River 1 mile NE of Ewing	2001	9	24	5.06
Middle Fabius River 1 mile NE of Ewing	2002	2	6	127
Middle Fabius River 1 mile NE of Ewing	2002	6	13	2.05
Mean				91.841

For more information call or write:

Missouri Department of Natural Resources

Water Protection Program

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